



Aquatic Phyto-Biodiversity of Bargi Dam Catchment Area at Jabalpur, Madhya Pradesh: An Appraisal

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ABSTRACT

Aim: The study was conducted on Bargi Dam catchment area at Jabalpur district of Madhya Pradesh with the objective of Determining "The Aquatic species Floristic Composition Diversity and the Vegetation Structure of the Aquatic Plants Communities in the Bargi Dam Catchment Area".

Methodology: Random sampling method was used to collect the vegetation data according to 36 plots of per quadrates 10m x10m size.

Results: A total of 119 species belonging to 79 genera and 39 families were recorded during the survey in which emergent 61%, marshy land 21%, free floating 9%, rooted floating 1%, submerged 8% aquatic plants were identified from the Bargi Dam catchment area.

Key Words: Wetland, Catchment, Floristic composition, Aquatic plants

INTRODUCTION

Aquatic ecosystems play an important role in human life. The aquatic reservoirs, tanks, dams, and ponds are used mostly for fishing, agriculture, irrigation, and other domestic purposes. Ponds are playing a very good role in rain harvesting, storage of water and regulation of ground water level. Wetland is among the most productive ecosystems in the world¹². Several works have been done on the aquatic macrophytes and phytosociology in different freshwater bodies of India Biswas⁸ Subramanyam (1962). And Bhat, and Yousuf, (2007) , Billore and Vyas (1981), Mishra (1974), Unni,(1971), Dhote,(2007), Siraj et al (2011), Maheshwari,(1960) , Choudhary and Upadhyay (2009) and Anand et al.,(2012), undertook the taxonomic study of aquatic Plants ecosystems.

In India the first comprehensive work on the wetland flora was produced by Biswas and Calder, (1984). Aquatic plants

are key components for the well-functioning of wetland ecosystem for biological productivity, supporting diverse community of ecosystem by providing lots of goods and services.

STUDY AREA

The entire study area around Bargi Dam (22°44'7.5" to 22°58'58.35" N latitude and 79°53'52" E to 80°7'13") is spread to about 279.23 sq km along the Bargi Dam Catchment area Bargi to Chutka on both sides, covering three districts of Madhya Pradesh State i.e. Jabalpur, Mandla and Seoni, Fig.1 Total six range via Ghansour, Sikara, Bargi, Barela, Bijadandi, and Kalpi were surveyed for Aquatic plants species and identification. Range wise altitudinal variation is given in Table-1. Such a variation in the altitude of study area provides a wide diversity of landscape and aquatic habitat.

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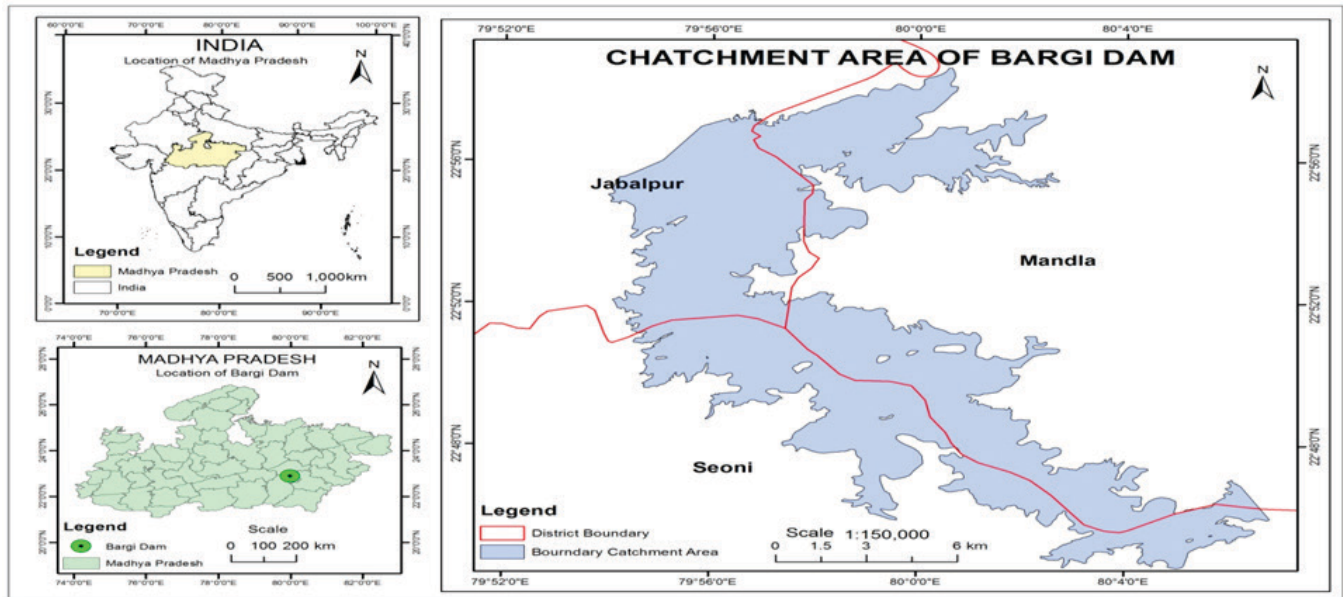


Figure 1: Study Sites on Bargi Dam Cathment Area .

MATERIAL AND METHODS

In The present study consisted of the monthly field observations, collection and identification of the different plant species accruing in Bargi Dam catchment area from 2014-2017. Qualitative and quantitative analysis of aquatic plants, and documentation were done following the methodology of Mishra (1974).The collected specimens were pressed and herbarium were prepared following Jain & Rao, (1977).

All specimens were deposited in the department of Plant Physiology J.N.K.V.V. Jabalpur The aquatic plants identification and nomenclature of the plants species were done in this paper based on available floras (The flora of Madhya Pradesh (Auther) and “Aquatic and wetland Plants of India” (Cooke,1901-1908).

CALCULATIONS WERE DONE USING FOLLOWING FORMULAE

$$\text{Density (D)} = \frac{\text{Total number of individuals of the species}}{\text{Total number of quadrats studied}}$$

$$\text{Frequency (F)} = \frac{\text{Total number of quadrats in which species has occurred}}{\text{Total number of quadrats studied}} \times 100$$

$$\text{Abundance} = \frac{\text{Total number of individuals of the species}}{\text{Total number of quadrats in which the species occurs}}$$

$$\text{Relative Density} = \frac{\text{No. of individuals of the species}}{\text{Total no. of individuals of all species}} \times 100$$

$$\text{Relative Frequency} = \frac{\text{No. of quadrats of occurrence of the individual species}}{\text{Total no. of quadrats of occurrence of all species}} \times 100$$

$$\text{Relative Abundance} = \frac{\text{Total abundance of individuals species}}{\text{Total abundance of all species}} \times 100$$

$$\text{(IVI) I Importance Value Index} = \text{Relative Density} + \text{Relative Frequency} + \text{Relative Abundance}$$

SIMPSON'S DIVERSITY INDICES

The term 'Simpson's Diversity Index' can actually refer to any one of 3 closely related indices.

Simpson's Index (D) measures the probability that two individuals randomly selected from a sample will belong to the same species (or some category other than species). There

are two versions of the formula for calculating **D**. Either is acceptable, but be consistent.

$$D = \frac{1}{\sum (n / N)^2}$$

where,

n = the total number of organisms of a particular species

N = the total number of organisms of all species

RESULTS

Table 1: Core Zone /Aquatic Zone

Core	Botanical name	Frenquency	Density	Abund- ence	RF	RD	RA	IVI
1	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	66.67	2.08	3.13	1.79	2.28	1.27	5.34
2	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	25.00	0.33	1.33	0.67	0.36	0.54	1.58
3	<i>Ammania auriculata</i> Willd.	33.33	0.58	1.75	0.89	0.64	0.71	2.24
4	<i>Ammania baccifera</i> L.	25.00	0.50	2.00	0.67	0.55	0.81	2.03
5	<i>Ammannia multiflora</i> L.	8.33	0.08	1.00	0.22	0.09	0.41	0.72
6	<i>Aponogeton natans</i> L.f	33.33	0.42	1.25	0.89	0.46	0.51	1.86
7	<i>Bacopa monnieri</i> (L.) Wettstein.	33.33	0.50	1.50	0.89	0.55	0.61	2.05
8	<i>Caesulia axillaris</i> Roxb.	41.67	0.75	1.80	1.12	0.82	0.73	2.67
9	<i>Caldesia oligococca</i> (F.V.Muell.) Buch-Ham	50.00	0.67	1.33	1.34	0.73	0.54	2.61
10	<i>Ceratophyllum demersum</i> L.	33.33	0.50	1.50	0.89	0.55	0.61	2.05
11	<i>Coix lacryma-jobi</i> L.	33.33	0.42	1.25	0.89	0.46	0.51	1.86
12	<i>Coix quatica</i> Roxb.	25.00	0.33	1.33	0.67	0.36	0.54	1.58
13	<i>Colocasia esculenta</i> (L.) Schott.	41.67	0.58	1.40	1.12	0.64	0.57	2.32
14	<i>Cyanotis axillaris</i>	16.67	0.58	3.50	0.45	0.64	1.43	2.51
15	<i>Commelina hasskarhi</i> C.Comm. Cyrt.	33.33	0.33	1.00	0.89	0.36	0.41	1.66
16	<i>Cyperus alulatus</i> J. Kern.	25.00	0.67	2.67	0.67	0.73	1.09	2.48
17	<i>Cyperus iria</i> L.	16.67	0.33	2.00	0.45	0.36	0.81	1.63
18	<i>Cyperus pangorei</i> Rottb.	25.00	0.42	1.67	0.67	0.46	0.68	1.80
19	<i>Cyperus pumilus</i> L.	25.00	0.42	1.67	0.67	0.46	0.68	1.80
20	<i>Cyperus rotundus</i> L.	16.67	0.67	4.00	0.45	0.73	1.63	2.80
21	<i>Dopartium Junecum</i> (Roxb.) Buch-Hum ex Benth.	50.00	1.42	2.83	1.34	1.55	1.15	4.04
22	<i>Eichhornia crassipes</i> (Mart.) Solms	66.67	0.67	1.00	1.79	0.73	0.41	2.92
23	<i>Elaeocarpus variabilis</i> Zmarzty	41.67	0.58	1.40	1.12	0.64	0.57	2.32
24	<i>Elaeocharis geniculata</i> (L.) R&S	50.00	0.92	1.83	1.34	1.00	0.75	3.09
25	<i>Eliocharis dulsis</i>	66.67	1.17	1.75	1.79	1.28	0.71	3.77
26	<i>Ganaphlium pulvinatum</i> Del.	83.33	1.17	1.40	2.23	1.28	0.57	4.08
27	<i>Glimus lotoides</i> L.	66.67	1.50	2.25	1.79	1.64	0.92	4.34
28	<i>Hydrilla verticillata</i> (L.f.) Royle	66.67	1.17	1.75	1.79	1.28	0.71	3.77

29	<i>Hygrophila auriculata</i> (Schumach.) Heine	58.33	1.42	2.43	1.56	1.55	0.99	4.10
30	<i>Ipomoea aquatica</i> Forssk	33.33	0.42	1.25	0.89	0.46	0.51	1.86
31	<i>Lemna perpusilla</i> Torrey.	50.00	0.50	1.00	1.34	0.55	0.41	2.29
32	<i>Limnophila gratioloides</i> R. Br.	41.67	0.92	2.20	1.12	1.00	0.90	3.01
33	<i>Limnophylla Sessiflora</i> L.	83.33	1.00	1.20	2.23	1.09	0.49	3.81
34	<i>Limnophyton obtusifolium</i> (L.) Miq	58.33	1.08	1.86	1.56	1.19	0.76	3.50
35	<i>Ludvigia perrium</i> L.	25.00	0.42	1.67	0.67	0.46	0.68	1.80
36	<i>Najas minor</i> L.	41.67	0.83	2.00	1.12	0.91	0.81	2.84
37	<i>Nelumbo nucifera</i> Gaertn.	58.33	0.83	1.43	1.56	0.91	0.58	3.06
38	<i>Phyla nodiflora</i> (L.) Greene	75.00	1.08	1.44	2.01	1.19	0.59	3.78
39	<i>Pistia stratiotes</i> L.	33.33	1.08	3.25	0.89	1.19	1.32	3.40
40	<i>Polygonum glabrum</i> Willd.	33.33	1.00	3.00	0.89	1.09	1.22	3.21
41	<i>Potamogeton pectinatus</i> L.	25.00	0.75	3.00	0.67	0.82	1.22	2.71
42	<i>Rotala serpillifolia</i> (Roth.) Breneck	16.67	0.33	2.00	0.45	0.36	0.81	1.63
43	<i>Sphaeranthus indicus</i> L.	41.67	0.75	1.80	1.12	0.82	0.73	2.67
44	<i>Spirodela polyrrhiza</i> (L.) Schleid.	25.00	0.58	2.33	0.67	0.64	0.95	2.26
45	<i>Typha angustata</i> Bory and Chaub.	66.67	2.17	3.25	1.79	2.37	1.32	5.48
46	<i>Utricularia vulgaris</i> L.	75.00	1.42	1.89	2.01	1.55	0.77	4.33
47	<i>Vallisneria spiralis</i>	100.00	2.42	2.42	2.68	2.64	0.98	6.31
48	<i>Verbascum chinense</i> (L.) Sant	8.33	0.25	3.00	0.22	0.27	1.22	1.72
49	<i>Cyperus digitatus</i> Roxb.	58.33	1.08	1.86	1.56	1.19	0.76	3.50
50	<i>Cyperus exalatus</i> Retz.	66.67	1.25	1.88	1.79	1.37	0.76	3.92
51	<i>Eriocaulon duthiei</i> Hook.	25.00	1.00	4.00	0.67	1.09	1.63	3.39
52	<i>Spilanthus ciliata</i> H.B.K.	41.67	2.00	4.80	1.12	2.19	1.95	5.26
53	<i>Eleocharis dulcis</i> (Burm.f.) Trin.	41.67	1.25	3.00	1.12	1.37	1.22	3.70
54	<i>Eleocharis atropurpurea</i> (Retz.) J.	41.67	1.42	3.40	1.12	1.55	1.38	4.05
55	<i>Fimbristylis falcata</i> (Vahl) Kunth.	33.33	0.92	2.75	0.89	1.00	1.12	3.02
56	<i>Fimbristylis ferruginea</i> (L.) Vahl.	41.67	0.75	1.80	1.12	0.82	0.73	2.67
57	<i>Fuirena ciliaris</i> (L.) Roxb.	33.33	0.67	2.00	0.89	0.73	0.81	2.44
58	<i>Fimbristylis dichotoma</i> (L.) Vahl.	33.33	1.50	4.50	0.89	1.64	1.83	4.37
59	<i>Fimbristylis ovata</i> (Burm.f.) J.	41.67	0.92	2.20	1.12	1.00	0.90	3.01
60	<i>Gnaphalium polycaulon</i> Pers.	41.67	1.08	2.60	1.12	1.19	1.06	3.36
61	<i>Grangea maderaspatana</i> (L.) Poir.	41.67	1.00	2.40	1.12	1.09	0.98	3.19
62	<i>Glossostigma diandra</i> (L.) K.	50.00	1.92	3.83	1.34	2.10	1.56	5.00
63	<i>Hygrophila schulli</i> (Buch-Ham.) M.R.	33.33	0.92	2.75	0.89	1.00	1.12	3.02
64	<i>Hygrophila seraphyllum</i> (Nees) T.	41.67	1.50	3.60	1.12	1.64	1.47	4.22
66	<i>Justisia quinqueangularis</i> Koenig.	16.67	0.67	4.00	0.45	0.73	1.63	2.80
67	<i>Justisia simplex</i> D.	16.67	0.83	5.00	0.45	0.91	2.04	3.39
68	<i>Lagarosiphon alternifolia</i> (Roxb.) Druce.	16.67	0.42	2.50	0.45	0.46	1.02	1.92
70	<i>Ludwigia perennis</i> L.	25.00	0.92	3.67	0.67	1.00	1.49	3.17
71	<i>Limnophilla indica</i> (L.) Druce.	25.00	0.92	3.67	0.67	1.00	1.49	3.17
72	<i>Murdannia nudiflora</i> (L.) Brenan.	33.33	1.00	3.00	0.89	1.09	1.22	3.21

73	<i>Murdannia spirata</i> (L.) G.	41.67	0.83	2.00	1.12	0.91	0.81	2.84
74	<i>Mimulus strictus</i> Benth.	41.67	1.08	2.60	1.12	1.19	1.06	3.36
75	<i>Mollugo pentaphylla</i> L.	50.00	1.25	2.50	1.34	1.37	1.02	3.72
76	<i>Neptunia oleracea</i> Lour.	25.00	0.75	3.00	0.67	0.82	1.22	2.71
77	<i>Nymphoides hydrophylla</i> (Lour.) Kunth.	25.00	0.75	3.00	0.67	0.82	1.22	2.71
78	<i>Nymphaea nouchali</i> Burm.f.	33.33	0.83	2.50	0.89	0.91	1.02	2.82
79	<i>Najas indica</i> (Willd.) Cham.	25.00	0.83	3.33	0.67	0.91	1.36	2.94
80	<i>Ottellia alismoides</i> (L.)	33.33	1.33	4.00	0.89	1.46	1.63	3.98
81	<i>Oryza rufipogon</i> Grif	25.00	0.83	3.33	0.67	0.91	1.36	2.94
82	<i>Persicaria glabra</i> (Willd.) Gomez.	33.33	1.00	3.00	0.89	1.09	1.22	3.21
83	<i>Persicaria barbata</i> (L.) Hara	33.33	0.75	2.25	0.89	0.82	0.92	2.63
84	<i>Potamogeton crispus</i> L.	16.67	0.75	4.50	0.45	0.82	1.83	3.10
85	<i>Panicum psilopodium</i> Trin.	33.33	1.33	4.00	0.89	1.46	1.63	3.98
86	<i>Paspalidium punctatus</i> (Burm.f.)	33.33	1.58	4.75	0.89	1.73	1.93	4.56
87	<i>Paspalum compactum</i> Roth..	41.67	1.08	2.60	1.12	1.19	1.06	3.36
88	<i>Rungia repens</i> (L.) Nees.	50.00	1.58	3.17	1.34	1.73	1.29	4.36
89	<i>Rorippa indica</i> (L.)Hiern	41.67	1.08	2.60	1.12	1.19	1.06	3.36
90	<i>Rumex dentatus</i> L. ssp. Klotzschianus (Meisn.) Rchb.	33.33	1.58	4.75	0.89	1.73	1.93	4.56
91	<i>Striga angustifolia</i> (D.Don.)S.	33.33	1.67	5.00	0.89	1.82	2.04	4.75
92	<i>Sutera dissecta</i> (Delile) Walp.	33.33	1.17	3.50	0.89	1.28	1.43	3.59
93	<i>Trapa natans</i> L.var.Bispinosa (Roxb.)	50.00	1.25	2.50	1.34	1.37	1.02	3.72
94	<i>Tripogon jacquemontii</i> Stapf	33.33	1.50	4.50	0.89	1.64	1.83	4.37
95	<i>Verbascum chinense</i> (L.)Sant	33.33	0.83	2.50	0.89	0.91	1.02	2.82
96	<i>Vetiveria zizanioides</i> (L.) Nash	41.67	1.17	2.80	1.12	1.28	1.14	3.53
97	<i>Azolla filiculoides</i>	41.67	1.67	4.00	1.12	1.82	1.63	4.57
		3733-333333	91.41666667	245.59	100.00	100.00	100.00	300.00

Table 2: Buffer Zone – 1/Riparian zone

B-1	Botanical name	occuurance	Frenquency	Density	Abund- ence	RF	RD	RA	IVI
1	<i>Aeschynomene indica</i> L.	3	25.00	0.33	1.33	0.67	0.36	0.54	1.58
2	<i>Alternanthera paronychiodes</i> St.	7	58.33	1.08	1.86	1.56	1.19	0.76	3.50
3	<i>Alternanthera philoxeroides</i> (Mart.) Griseb	7	58.33	1.67	2.86	1.56	1.82	1.16	4.55
4	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC	6	50.00	1.17	2.33	1.34	1.28	0.95	3.57
5	<i>Ammania auriculata</i> Willd.	6	50.00	1.75	3.50	1.34	1.91	1.43	4.68
6	<i>Ammania baccifera</i> L.	10	83.33	1.17	1.40	2.23	1.28	0.57	4.08
7	<i>Ammannia multiflora</i> L.	1	8.33	0.33	4.00	0.22	0.36	1.63	2.22
8	<i>Azolla pinnata</i> (Roxb. ex Griff.) Bonap	3	25.00	0.50	2.00	0.67	0.55	0.81	2.03
9	<i>Bergia ammannioides</i> Roxb.ex Roth.	1	8.33	0.50	6.00	0.22	0.55	2.44	3.21

10	Caesulia axillaris Roxb.	6	50.00	0.67	1.33	1.34	0.73	0.54	2.61
11	Ceratophyllum demersum L.	3	25.00	1.25	5.00	0.67	1.37	2.04	4.07
12	Coix lacryma-jobi L.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
13	Coix quatica Roxb.	4	33.33	0.42	1.25	0.89	0.46	0.51	1.86
14	Colocasia esculenta (L.) Schott	2	16.67	0.83	5.00	0.45	0.91	2.04	3.39
15	Commelina hasskarhi C.Comm. Cyrt.	2	16.67	0.50	3.00	0.45	0.55	1.22	2.21
16	Cyathocline purpurea (Buch-Ham ex d.Don)Oktze	1	8.33	0.50	6.00	0.22	0.55	2.44	3.21
17	Cyperus difformis L	4	33.33	0.75	2.25	0.89	0.82	0.92	2.63
18	Cyperus iria L.	6	50.00	0.83	1.67	1.34	0.91	0.68	2.93
19	Cyperus natans Vahl.	4	33.33	1.08	3.25	0.89	1.19	1.32	3.40
20	Cyperus pangorei Rottb.	3	25.00	0.75	3.00	0.67	0.82	1.22	2.71
21	Cyperus pseudokullingioides Kuk.	2	16.67	0.42	2.50	0.45	0.46	1.02	1.92
22	Cyperus pumilus L.	9	75.00	1.50	2.00	2.01	1.64	0.81	4.46
23	Echinocloa colonum (L.) Link.	3	25.00	0.92	3.67	0.67	1.00	1.49	3.17
24	Eichhornia crassipes (Mart.) Solms	2	16.67	0.92	5.50	0.45	1.00	2.24	3.69
25	Eliocharis dulcis	3	25.00	0.67	2.67	0.67	0.73	1.09	2.48
26	Ganaphlium pulvinatum Del.	6	50.00	0.75	1.50	1.34	0.82	0.61	2.77
27	Hydrilla verticillata (L.f.) Royle	2	16.67	0.42	2.50	0.45	0.46	1.02	1.92
28	Ipomoea aquatica Forssk.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
29	Ischaemum rugosum Salisb.	6	50.00	0.75	1.50	1.34	0.82	0.61	2.77
30	Limnophyton obtusifolium (L.) Miq	2	16.67	0.33	2.00	0.45	0.36	0.81	1.63
31	Ludvigia perrium L.	1	8.33	0.58	7.00	0.22	0.64	2.85	3.71
32	Najas minor L.	3	25.00	0.83	3.33	0.67	0.91	1.36	2.94
33	Nelumbo nucifera Gaertn.	7	58.33	1.08	1.86	1.56	1.19	0.76	3.50
34	Phyla nodiflora (L.) Greene	4	33.33	0.58	1.75	0.89	0.64	0.71	2.24
35	Pistia stratiotes L.	2	16.67	0.33	2.00	0.45	0.36	0.81	1.63
36	Rotala serpillifolia (Roth.)Bremeck	9	75.00	1.17	1.56	2.01	1.28	0.63	3.92
37	Spirodela polyrrhiza (L.) Schleid.	9	75.00	1.00	1.33	2.01	1.09	0.54	3.65
38	Utricularia vulgaris L.	4	33.33	0.75	2.25	0.89	0.82	0.92	2.63
39	Vallisneria spiralis	11	91.67	2.58	2.82	2.46	2.83	1.15	6.43
40	Cyperus corymbosus Rottb.	8	66.67	0.92	1.38	1.79	1.00	0.56	3.35
41	Cyperus digitatus Roxb.	6	50.00	1.25	2.50	1.34	1.37	1.02	3.72
42	Cyperus exalatus Retz.	10	83.33	2.67	3.20	2.23	2.92	1.30	6.45
43	Eriocaulon duthiei Hook.	5	41.67	1.08	2.60	1.12	1.19	1.06	3.36
44	Eleocharis dulcis (Burm.f.)Trin.	2	16.67	0.42	2.50	0.45	0.46	1.02	1.92
45	Eleocharis atropurpurea (Retz.)J.	9	75.00	1.17	1.56	2.01	1.28	0.63	3.92
46	Eclipta prostrata L.	5	41.67	0.67	1.60	1.12	0.73	0.65	2.50
47	Fimbristylis falcata (Vahl) Kunth.	9	75.00	1.08	1.44	2.01	1.19	0.59	3.78
48	Fuirena ciliaris (L.) Roxb.	9	75.00	1.00	1.33	2.01	1.09	0.54	3.65
49	Fimbristylis ovata (Burm.f.) J.	4	33.33	0.58	1.75	0.89	0.64	0.71	2.24
50	Gnaphalium polycaulon Pers.	4	33.33	0.67	2.00	0.89	0.73	0.81	2.44

51	Grangea maderaspatana (L.)Poir.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
52	Glossostigma diandra (L.)K.	2	16.67	0.42	2.50	0.45	0.46	1.02	1.92
53	Ipomoea pes-tigridis L.	3	25.00	0.33	1.33	0.67	0.36	0.54	1.58
54	Justisia diffusa willd	1	8.33	0.17	2.00	0.22	0.18	0.81	1.22
55	Justisia quinqueangularis Koenig.	2	16.67	0.25	1.50	0.45	0.27	0.61	1.33
56	Justisia simplex D.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
57	Mimulus strictus Benth.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
58	Mollugo pentaphylla L.	1	8.33	0.33	4.00	0.22	0.36	1.63	2.22
59	Neptunia oleracea Lour.	2	16.67	0.33	2.00	0.45	0.36	0.81	1.63
60	Nymphoides hydrophylla (Lour.) Kunth.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
61	Nymphaea nouchali Burm.f.	4	33.33	0.42	1.25	0.89	0.46	0.51	1.86
62	Oryza rufipogon Grif.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
63	Persicaria glabra (Willd.)Gomez.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
64	Persicaria barbata (L.) Hara	1	8.33	0.33	4.00	0.22	0.36	1.63	2.22
65	Paspalum compactum Roth.	1	8.33	0.25	3.00	0.22	0.27	1.22	1.72
66	Rungia repens (L.) Nees.	1	8.33	0.33	4.00	0.22	0.36	1.63	2.22
67	Rumex dentatus L.	2	16.67	0.58	3.50	0.45	0.64	1.43	2.51
68	Sutera dissecta (Delile) Walp.	4	33.33	0.58	1.75	0.89	0.64	0.71	2.24
69	Tripogon jacquemontii Stapf	3	25.00	0.50	2.00	0.67	0.55	0.81	2.03
70	Vetiveria zizanioides (L.) Nash	2	16.67	0.25	1.50	0.45	0.27	0.61	1.33
71	Azolla filiculoides	5	41.67	0.67	1.60	1.12	0.73	0.65	2.50
		277	2308.333333	50.91666667	186.55	61.83	55.70	75.96	193.49

Table 3: Buffer zone / Terrestrial zone

B-2	Botanical name	Frequency	Density	Abundance	RF	RD	RA	IVI
1	<i>Aeschynomene indica</i> L.	58.33	1.33	2.29	1.56	1.46	0.93	3.95
2	<i>Alternanthera paronychiodes</i> St	25.00	0.25	1.00	0.67	0.27	0.41	1.35
3	<i>Alternanthera philoxeroides</i> (Mart.) Griseb	50.00	1.08	2.17	1.34	1.19	0.88	3.41
4	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC	58.33	2.08	3.57	1.56	2.28	1.45	5.30
5	<i>Ammania auriculata</i> Willd	41.67	1.25	3.00	1.12	1.37	1.22	3.70
6	<i>Ammania baccifera</i> L.	16.67	0.17	1.00	0.45	0.18	0.41	1.04
7	<i>Ammannia multiflora</i> Linn	16.67	0.25	1.50	0.45	0.27	0.61	1.33
8	<i>Aponogeton natans</i> L.f	8.33	0.17	2.00	0.22	0.18	0.81	1.22
9	<i>Coix lacryma-jobi</i> L.	16.67	0.42	2.50	0.45	0.46	1.02	1.92
10	<i>Coix quatica</i> Roxb.	16.67	0.42	2.50	0.45	0.46	1.02	1.92
11	<i>Cyanotis axillaris</i>	16.67	0.58	3.50	0.45	0.64	1.43	2.51
12	<i>Commelina hasskarhi</i> C.Comm. Cyrt.	25.00	0.50	2.00	0.67	0.55	0.81	2.03
13	<i>Cyperus alulatus</i> J. Kern.	8.33	0.33	4.00	0.22	0.36	1.63	2.22
14	<i>Ipomoea aquatica</i> Forssk	16.67	0.42	2.50	0.45	0.46	1.02	1.92

15	<i>Ischaemum rugosum</i> Salisb.	75.00	1.58	2.11	2.01	1.73	0.86	4.60
16	<i>Marsilea quadrifolia</i> L.	41.67	1.17	2.80	1.12	1.28	1.14	3.53
17	<i>Polygonum glabrum</i> Willd.	33.33	0.75	2.25	0.89	0.82	0.92	2.63
18	<i>Sphaeranthus indicus</i> L.	16.67	0.67	4.00	0.45	0.73	1.63	2.80
19	<i>Typha angustata</i> Bory and Chaub.	75.00	1.00	1.33	2.01	1.09	0.54	3.65
20	<i>Cyperus corymbosus</i> Rottb.	66.67	0.92	1.38	1.79	1.00	0.56	3.35
21	<i>Cyperus digitatus</i> Roxb.	58.33	1.33	2.29	1.56	1.46	0.93	3.95
22	<i>Cyperus exalatus</i> Retz.	41.67	1.17	2.80	1.12	1.28	1.14	3.53
23	<i>Eriocaulon duthiei</i> Hook.	83.33	1.67	2.00	2.23	1.82	0.81	4.87
24	<i>Spilanthus ciliata</i> H.B.K.	75.00	1.17	1.56	2.01	1.28	0.63	3.92
25	<i>Gnaphalium polycaulon</i> Pers.	50.00	0.75	1.50	1.34	0.82	0.61	2.77
26	<i>Ipomoea pes-tigridis</i> L.	25.00	0.33	1.33	0.67	0.36	0.54	1.58
27	<i>Lagarosiphon alternifolia</i> (Roxb.) Druce.	16.67	0.33	2.00	0.45	0.36	0.81	1.63
28	<i>Ludwigia adscendens</i> (L.) Hara.	16.67	0.50	3.00	0.45	0.55	1.22	2.21
29	<i>Ludwigia perennis</i> L.	16.67	0.33	2.00	0.45	0.36	0.81	1.63
30	<i>Nymphaea nouchali</i> Burm.f.	33.33	0.67	2.00	0.89	0.73	0.81	2.44
31	<i>Najas indica</i> (Willd.) Cham.	16.67	0.42	2.50	0.45	0.46	1.02	1.92
32	<i>Ottellia alismoides</i> (L.)	16.67	0.17	1.00	0.45	0.18	0.41	1.04
33	<i>Panicum psilopodium</i> Trin.	16.67	0.58	3.50	0.45	0.64	1.43	2.51
34	<i>Paspalidium punctatus</i> (Burm.f.)	16.67	0.58	3.50	0.45	0.64	1.43	2.51
35	<i>Paspalum compactum</i> Roth..	16.67	0.58	3.50	0.45	0.64	1.43	2.51
36	<i>Rungia repens</i> (L.) Nees.	25.00	0.75	3.00	0.67	0.82	1.22	2.71
37	<i>Trapa natans</i> L.	41.67	0.67	1.60	1.12	0.73	0.65	2.50
38	<i>Tripogon jacquemontii</i> Stapf	16.67	0.33	2.00	0.45	0.36	0.81	1.63
39	<i>Vetiveria zizanioides</i> (L.) Nash	41.67	0.83	2.00	1.12	0.91	0.81	2.84
40	<i>Azolla filiculoides</i>	33.33	0.42	1.25	0.89	0.46	0.51	1.86
		1341.666667	28.91666667	91.72	35.94	31.63	37.35	104.92

DISCUSSION

In this study, a total of 119 species, including Submerged, rooted floating, marshy land, free floating, and emergent aquatic plants, were recorded, (Fig.2)

Core Zone-1 - Overall diversity based on IVI in core zone was 300.00, and top ten species which have high IVI in core zone comprised of *Vallisneria spiralis* (6.31). *Typha angustata* Bory and Chaub. (5.48), *Alternanthera philoxeroides* (Mart.) Griseb (5.54), *Spilanthus ciliata* H.B.K (5.26). *Glossostigma diandra*(L.) K, (5.00). *Striga angustifolia* (D.Don.) S.(4.75). *Azolla filiculoides* (4.57) *Paspalidium punctatus* (Burm.f.) (4.56) .And *Rumex dentatus* L. sp. *Klotzschianus* (Meisn.) Rchb , (4.56) , *Fimbristylis dichotoma* (L.) Vahl. (4.37). Table-01

Buffer Zone II - Overall diversity based on IVI in Buffer-1 zone was 193.49 and top ten species having high IVI diver-

sity in Buffer-01 zone were *Cyperus exalatus* Retz (6.45). *Vallisneria spiralis* (6.43), *Ammania auriculata* Willd (4.68), *Alternanthera philoxeroides*(Mart.)Griseb (4.55). *Cyperus pumilus* L.(4.46). *Ammania baccifera* L.(4.08), *Ceratophyllum demersum* L. (4.07), *Rotala serpillifolia* (Roth.)Breneck (3.92), *Eleocharis atropurpurea* (Retz.) J.(3.92), *Fimbristylis falcata* (Vahl) Kunth (3.78). Table-02

Buffer Zone III - Overall diversity (IVI) in Buffer-02 zone was 104.92 and top ten species with high IVI in this zone were *Alternanthera sessilis* (L.) R.Br. ex DC. (5.30). *Eriocaulon duthiei* Hook (4.87). *Ischaemum rugosum* Salisb (4.60) *Aeschynomene indica* L. (3.95). *Cyperus digitatus* Roxb. (3.95), *Spilanthus ciliata* H.B.K. (3.92), *Ammania auriculata* Willd (3.70), *Typha angustata* Bory and Chaub (3.65). *Marsilea quadrifolia* L (3.53).and *Cyperus exalatus* Retz. (3.53) table no.01,02, and 03. Table-03

CONCLUSION

This study provides the comprehensive knowledge about the plant genera isolated from the studied region, my research also help the researchers to know about the valuable species that were documented as per the rules of plant nomenclature. A total of 119 species belonging to 79 genera and 39 families were recorded during the survey in which emergent 61%, marshy land 21%, free floating 9%, rooted floating 1%, submerged 8% aquatic plants were identified from the Bargi Dam catchment area.

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